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OF ALBERTA



ALBERTA OIL REVIEW

1953

# GOVERNMENT OF THE PROVINCE OF ALBERTA

DEPARTMENT OF ECONOMIC AFFAIRS

HON. A. J. HOOKE  
MINISTER

RALPH R. MOORE  
DEPUTY MINISTER



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## ALBERTA OIL REVIEW

1953

In Alberta, 1953 was a year of disappointments which had the effect of reducing substantially the rate of natural gas and oil exploration and development.

Although crude oil production increased approximately 30 percent during the year, there were noticeable decreases in the number of operating drilling rigs and the number of new producing oil wells. In Dec., 1953; there were 118 rigs operating, compared to 158 in Dec., 1952; 884 oil wells were brought in during 1953, compared to 946 in 1952. Footage drilled during the year was 6,422,889 feet, only a relatively slight amount more than the 6,631,529 feet drilled in the previous year.

As the year opened, it appeared that the Alberta oil industry was faced with its greatest challenge. It was considered that oil producers would have no worries about markets, only worries about supplying the markets, for it was becoming apparent that existing markets and new markets being developed by pipeline construction might exceed the industry's production.

Completion of the 24-inch, 711-mile Trans Mountain pipeline from Edmonton to Vancouver and expansion and extension of the Interprovincial Line to Sarnia, Ontario offered promise of a greatly increased market for Alberta crude.

Designed for a maximum capacity of 200,000 barrels a day, the pipeline was to carry initially 75,000 barrels a day, of which half would be transported to northern California by tanker, the rest going to Vancouver refineries. The potential of this line offered hope that the monthly oil production could be increased 50 percent.

Extension of the Interprovincial line by a 30-inch line from Superior, Wisconsin, to Sarnia indicated that oil production would have to be increased approximately 40,000 barrels per day by the end of 1953 to supply the increased capacity of the extended pipeline.

Looking ahead, the oil industry saw that it should increase its ability to produce to at least 350,000 barrels a day by the end of 1953 if the two pipeline outlets were to be adequately served and the requirements of existing markets met. Since 1952 estimates of producibility were around 282,000 barrels a day, it looked as if the oil industry would be called upon to provide another 68,000 barrels a day producibility by the end of 1953, a producibility increase which would require a concomitant development of new oil reserves of approximately a billion barrels.

The hopes of a market along the U. S. West Coast, brightened by a 50 percent reduction in U. S. duty on oil imports and a rise in price of California crude, were dashed when tanker rates for movement of Middle East crude to the West Coast were reduced greatly, making it cheaper to land foreign crude in California than to bring oil from Canada by pipeline and tanker. With the U. S. crude oil market postponed, the outlook changed; Trans Mountain began moving oil in October in quantities far less than had been hoped, and, even in 1954, the line was expecting to move only 28,000 barrels a day.

However, Trans Mountain Pipeline expects to increase its throughput to 61,000 barrels a day in the last quarter of 1954, when the first major oil refinery in the American Pacific Northwest goes on stream. This refinery, with a capacity of 35,000 barrels a day, will open a new market for Alberta crude almost as large as the British Columbia market already being served. Further improvement in the western market will come in 1955 when Shell Oil Company's Anacortes, Washington, refinery goes into production with a capacity of 50,000 barrels a day.

Already, the Trans Mountain line has made most of the British Columbia refineries independent of crude oil imports and opened the way for the first overseas export of petroleum products manufactured from Alberta crude oil. In March, 1954, the Imperial Oil Refinery at Ioco, B. C. will load 4,500,000 gallons of gasoline to fill the first of what may be many orders from Japan.

Daily average Alberta oil production rose to 260,000 barrels a day, a creditable 32 percent increase from 1952, while Alberta crude oil potential increased to 317,000 barrels a day. During 1953, western Canada oil fields had a potential production of 345,000 barrels a day, a 22 percent increase in producibility which practically achieved the 24 percent increase in producibility indicated necessary at the start of the year. These, together with record spendings by the oil industry averaging \$1,000,000 a day and large increases in proved oil reserves, are the bright side of the 1953 oil picture. But with the Interprovincial expected to deliver about 170,000 barrels daily during 1954 and Trans Mountain's reduced market, the 1954 market for western Canadian oil will be only approximately 277,000 barrels daily.

Delays in the decision to export natural gas and tight competition for new capital were other factors which prevented oil development from increasing its rate of growth but as the year ended, the industry could still look ahead to a great future.

Toward the end of 1952, there was some pessimism over the lack of new discoveries of the magnitude and productivity of Leduc and Redwater. But toward the end of 1953, exciting developments began to revive the spirits of the industry.

Taking a long-term view of western Canada's oil future, there is no cause for pessimism. With more than 770,000 square miles under exploration, as yet only one well has been drilled for every 200 miles of promising land. In the United States, one well has been drilled for each 12 square miles of potential oil-bearing land.

The suggestion that there are many more major oil fields to be discovered in Alberta was given further support by the discoveries in the Pembina area, 65 miles south-west of Edmonton. Here, in June, 1953, the first Cardium sand oil discovery recorded in Canada was made when Socony Seaboard Pembina 1 struck a 30-35 foot thick payzone in the Cardium sand formation at 5,310 feet. Subsequent wells drilled in the area have had astonishing success, only one dry well being reported from drilling

As a result of the Pembina discovery, there is feverish activity in the huge area extending north-west and south-east from the original Pembina discoveries and the new area is being talked-up as the greatest oil discovery made in western Canada. Already, the area favorable for development is the largest oil area in Canada and ranks high in size with the great American fields.

Estimates on the recoverable crude oil reserves in the Pembina area, as given recently by three companies applying for permission to build pipelines from the region, were 952,960,000 barrels, 868,000,000 barrels and 762,000,000 barrels. Even with the lowest estimate, Pembina is the largest oilfield in Canada, since Redwater, the previous holder of the title, has reserves of 500,000,000 barrels.

The area extending north and south from Pembina is gaining the name of the "Alberta Basin", and offers a good chance of rivalling the "Fairway", the area running north-west and south-east of Edmonton and containing all the important Devonian limestone fields such as Redwater, Leduc-Woodbend, Acheson-Stony Plain and Wizard Lake.

Land in the Alberta Basin, unlike the Fairway which is many small holdings, is practically entirely Alberta Crown reservations, some as large as 100,000 acres. When a discovery is made in the Alberta Basin, the company has ample protection in acreage and is almost certain to retain a major interest in any fields discovered. In addition, when such large reservations are returned to lease with 50 percent of the acreage going back to the Alberta Government, much proven or partly proven acreage will be available for sale at Crown auctions. The competition developing for acreage in the Pembina area became evident in January when oil companies paid the Alberta Government \$31,675,041 in the largest sale of petroleum and natural gas leases and reservation rights in Alberta's history.

During the sale, four reservations and three 160-acre leases in the Pembina area sold for \$28,502,192 while the Texaco Exploration Company paid \$13,000,125 -- the highest price ever

paid for a single reservation in Alberta- for 92,160 acres in the Cynthia Reserve, near the present Pembina producing wells.

### NATURAL GAS

In 1953, the Alberta Petroleum and Natural Gas Conservation Board reported that Alberta had enough natural gas to meet its requirements for the next 30 years, thus opening the way for export of Alberta natural gas to eastern Canada.

Following the Board's report, the Government of Canada announced that it would permit natural gas to travel to eastern Canada through an all-Canadian route, although a supply would be made available to the Minneapolis-St. Paul area of the United States.

The merger of the two competing natural gas pipeline companies, Western Pipe Lines and Trans - Canada Pipe Lines, opened the way for the building of the world's longest natural gas pipeline - a line 2,240 miles long, costing more than \$300,000,000, from Princess, Alberta to Montreal.

The pipeline would pass through Regina to Winnipeg, where an extension would supply the Minneapolis market. From Winnipeg, the natural gas would follow an all - Canadian route around the Lakehead to Sudbury, Ontario and then to Toronto. From Toronto, natural gas would be piped to Montreal and southern Ontario.

In its report, the Petroleum and Natural Gas Conservation Board stated that Alberta's established natural gas reserves now totalled 11.5 trillion cubic feet. Alberta's domestic requirements for the next 30 years were estimated at 4.45 trillion cubic feet, with an estimated 6.4 trillion cubic feet of established disposable reserves necessary to meet annual and peak-day requirements of the period. With 256 billion cubic feet allotted for export to Dawson Creek, B. C., 210 billion cubic feet allocated for possible export to the Canadian and American West Coast by Westcoast Transmission, and 32.3 billion cubic feet for export to Montana, 4.8 trillion cubic feet was estimated surplus to Alberta's requirements for the next 30 years. Further,

natural gas reserves at the rate of 1.25-1.5 trillion cubic feet a year for the next eight or ten years.

Among the large natural gas fields whose reserves of natural gas were estimated in the report were: Pincher Creek, 2 trillion cubic feet; Cessford, 965 billion cubic feet; Medicine Hat-Many Islands, 830 billion cubic feet; Bonnie Glen, 744 billion cubic feet; Homeglen-Rimbey, 500 billion cubic feet; Nevis, 370 billion cubic feet; Okotoks, 100 billion cubic feet; and Fort Saskatchewan, 100 billion cubic feet.

Of the amount of natural gas estimated to be surplus, 217 billion cubic feet are in the Peace River area, which will supply West Coast requirements when the U. S. Federal Power Commission decides whether Alberta or New Mexico natural gas will serve the Pacific Northwest. The Palowki Lake area, which supplies gas to Montana, contains 334 billion cubic feet of the surplus, while 232 billion cubic feet are in the Medicine Hat-Many Islands fields, two trillion cubic feet are in the Pincher Creek field, and 1,222 trillion in the Cessford area. The rest of the surplus natural gas is distributed through other oil and natural gas fields in northern and central Alberta.

It is expected that the final obstructions to the utilization of Alberta natural gas will be cleared away in 1954, The U. S. Federal Power Commission is expected to announce its decision in 1954 on whether natural gas from the San Juan Basin of New Mexico or Peace River natural gas flowing through the proposed pipeline of Westcoast Transmission will supply U. S. West Coast requirements. Although details of marketing and gathering systems still have to be completed, it is also expected that start on the eastern natural gas pipeline will be made in the summer of 1954.



TABLE A

ALBERTA'S PRODUCING OIL AREAS  
as of February 22, 1954

<u>FIELD</u>	<u>PRODUCING DEPTHS</u>	<u>PRODUCTIVE FORMATION</u>	<u>GRAVITY OF OIL (API)</u>	<u>AGE OF FIELD YEARS</u>	<u>WELLS</u>
Turner Valley Crude Oil .....	6,800-9,600	Madison .....	35-59	17	
Turner Valley Gas .....	3,200-6,800		55-73	29	330
Turner Valley Shallow wells ..	3,200-3,700		49-50	39	
Leduc-Woodbend .....	5,000-5,400	Dev. D2, D3, L. Cret...	35-42	7	1260
Redwater.....	3,300	Devonian D3.....	33-36	5	926
Joarcam .....	3,280	Viking D2 .....	37	4	411
Acheson-Stony Plain.....	3,900-5,500	Dev. D3 Low, Cret .....	37-38	3	105
Excelsior .....	3,800-3,900	Devonian D2 .....	35-36	4	36
Big Valley .....	5,200-5,300	Devonian D2, D3 .....	30-34	3	40
Campbell .....	3,700-3,300	L. Cretaceous .....	30-34	4	15
Duhamel .....	4,500-4,800	Devonian D2, D3 .....	34-35	3	28
Wizard Lake .....	6,200	Blairmore, D2,D3, Vik.	38	3	49
Golden Spike .....	5,500-5,900	Devonian D3 .....	38	4	15
Del Bonita .....	5,200	Madison .....	34-37	14	12

TABLE A  
(continued)

FIELD	DEPTHS	PRODUCTIVE FORMATION	GRAVITY OF OIL (API)	AGE OF FIELD YEARS	WELLS
New Norway .....	4,000	D2 & D3	32-39	3	17
Armisie .....	4,000	L. Cretaceous.....	38	3	10
Bashaw .....	5,700	D3 .....	38-41	3	5
Whitemud .....	4,100	L. Cretaceous .....	35	4	4
Spring Coulee .....	6,000-6,100	Madison .....	35-37	3	4
Ellerslie .....	3,900	L. Cretaceous .....	30	3	6
Bonn Accord .....	3,800-3,900	Devonian D2 .....	36	4	11
Barons .....	4,100	Viking .....	34	3	5
Drumheller .....	4,500-5,500	L. Cretaceous .....	31-34	3	14
Bonnyville .....	1,100-1-200	Colony Sand .....	14	3	18
Lloydminster .....	1,900	L. Cretaceous .....	9-17	14	355
Vermillion .....	1,800	L. Cretaceous .....	7-10	14	29
Stettler .....	5,400	Dev. D2, D3, L. Cret...	27-30	4	89
Taber .....	3,200	L. Cretaceous .....	23	15	20
Conrad .....	3,100	L. Cretaceous .....	26	9	16
Princess .....	2,500-3,900	Devonian .....	24-32	13	13

TABLE A  
( continued )

FIELD	PRODUCING DEPTHS	PRODUCTIVE FORMATION	GRAVITY OF OIL (API)	AGE OF FIELD YEARS	WELLS
Wainwright .....	2,200	L. Cretaceous.....	20	28	24
Dina .....	1,700	L. Cretaceous.....	9-14	6*	5
Bonnie Glen.....	6,500-7,000	Devonian D3.....	38-40	2	102
Fenn-North Big Valley.....	5,200	D2, 3.....	30-33	2	146
Malmo.....	4,500-5,200	L. C. Devonian D2,D3....	35-40	2	43
Namao.....	3,700-3,800	L. Cretaceous.....	30-33	2	16
Alliance.....	3,000	Viking.....	26	1	5
Baxter Lake.....	2,200	L. Cretaceous.....	20	1	6
Skaro .....	3,900-4,000	Viking.....	38	1	4
South Camrose.....	3,200	Viking.....	36	1	8
Glen Park.....	6,000-6,200	Devonian D2,D3.....	35-42	2	16
Battle.....	3,300	Viking.....	36	1	8
Cessford.....	2,940	L. Cretaceous.....	25.9	1½	26
Chamberlain .....	2,000-3,000	L. Cretaceous.....	26-27	2	5
Chauvin.....	2,100	L. Cretaceous.....	23-25	1½	27
Clive.....	6200-6350	D2, D3.....	40	2½	19

TABLE A  
(continued)

FIELD	PRODUCING DEPTHS	PRODUCTIVE FORMATION	GRAVITY OF OIL (API)	AGE OF FIELD YEARS	WELLS
Erskine.....	5,400	D3 .....	34	1	19
Fairydell.....	4,000	D2, D3.....	25-30	1	8
Joffre .....	6,900	Viking.....	40	$\frac{1}{2}$	14
Legal.....	2,900	Viking.....	31.3	2	7
Peavey.....	2800-3550	Viking, L. Cretaceous	30	2	11
Samson.....	5350	L. Cretaceous....	28.4	$\frac{1}{2}$	4
Westrose.....	7200	D3.....	40.5	$1\frac{1}{2}$	15
West Drumheller.....	5600	Devonian.....	41.9	$1\frac{1}{2}$	49
Pembina.....	5310	Cardium Sand.....	37	$\frac{1}{2}$	4
Other Areas.....					106

\*Dina first produced in 1929 but present production is from a new pool.

ALBERTA OIL AND NATURAL GAS PRODUCTION

TABLE B

	1953		1952	
	Crude Oil bbl.	Natural Gas mscf.	Crude Oil bbl.	Natural Gas mscf.
January	5,040,353	12,055,899	3,837,499	10,651,642
February	4,470,171	9,307,562	3,231,539	8,755,531
March	4,696,554	9,613,473	3,434,403	9,139,249
April	5,144,219	9,340,929	3,729,327	6,967,328
May	5,870,881	8,031,561	5,400,261	6,858,479
June	6,499,655	7,834,109	5,230,810	6,124,071
July	7,723,760	7,419,871	5,646,408	5,118,279
August	7,958,813	7,706,144	5,779,663	6,113,786
September	7,819,958	8,646,559	5,739,546	6,815,750
October	6,815,600	9,612,383	5,937,967	8,149,016
November	7,162,317	11,550,165	5,367,828	9,478,552
December	7,614,109	13,290,059	5,580,472	10,656,233

TABLE C  
CRUDE OIL PRODUCTION  
by FIELDS (bbls)

	<u>1953</u>	<u>1952</u>
Acheson	2,497,850	2,016,855
Alliance	25,594	16,181
Armisie	78,956	103,594
Barons	44,372	33,693
Bashaw	35,049	56,493
Battle	53,856	No production
Baxter Lake	41,335	20,125
Big Valley	810,190	657,875
Bon Accord	124,022	83,526
Bonnie Glen	5,550,715	743,490
Bonnyville	45,051	20,871
Campbell	40,238	46,037
Cessford	85,903	2,361
Chamberlain	29,323	23,592
Chauvin	90,747	555
Clive	148,919	33,452
Conrad	126,170	135,037
Del Bonita	38,543	41,205
Dina	11,203	19,694
Drumheller	278,862	175,688
Duhamel	535,986	347,140
Ellerslie	41,043	44,975
Erskine	48,897	No production
Excelsior	1,060,555	933,644
Fairydell	80,842	No production
Fenn	1,412,996	343,766
Glen Park	414,978	282,719
Golden Spike	2,167,636	1,279,103
Joffre	28,814	No production
Joseph Lake	1,286,736	1,001,843
Jumping Pound	96,033	67,257
Leduc-Woodbend	21,362,524	17,839,209
Legal	68,687	21,617
Lloydminster	1,059,552	1,057,354
Malmo	671,785	272,240
Morinville	5,028	No production
Namao	81,788	41,333
New Norway	325,142	287,988
North Big Valley	980,561	74,446
Oberlin	237	558
Peavey	46,795	20,646
Princess	36,421	72,970
Redwater	23,281,596	23,975,841
Samson	14,914	No production
Skaro	9,345	7,026
South Camrose	71,791	30,799
Spring Coulee	6,832	7,271
Stettler	438,041	607,078
Taber	66,779	81,464
Turner Valley	2,409,967	2,655,007
Vermilion	35,475	39,058
Wainwright	68,726	27,850
West Drumheller	539,586	11,856
Westerose	930,073	98,115
Whitelaw	No production	2,843
Whitemud	18,262	20,010
Wizard Lake	3,095,287	1,696,077

TABLE D  
NATURAL GAS PRODUCTION (mscf)

	<u>1953</u>	<u>1952</u>
Acheson	999,374	790,289
Armena-Camrose	1,201,707	349,684
Armistie	36,915	46,839
Athabasca	13,216	65,324
Barons	6,185	6,943
Bashaw	37,773	110,195
Baxter Lake	6,556	2,195
Big Valley	341,034	247,732
Black Butte	2,045,508	1,370,657
Bon Accord	15,791	2,623
Bonnie Glen	4,071,793	522,087
Bonnyville	85,164	74,106
Bow Island	328,725	625,476
Brooks	83,662	75,276
Campbell	81,634	72,495
Cessford	71,077	281
Chamberlain	13,748	7,175
Clive	181,603	10,979
Cold Lake	46,227	No production
Del Bonita	12,000	12,000
Drumheller	100,783	113,678
Duhamel	169,155	116,941
Duvernay	31,670	No production
Elk Point	51,086	42,824
Ellerslie	77,683	64,130
Erskine	20,951	No production
Excelsior	224,003	167,575
Fenn	579,802	167,981
Foremost	18,670	111,060
Glen Park	231,182	156,267
Golden Spike	826,208	418,605
Joseph Lake	598,618	641,291
Jumping Pound	10,466,079	7,439,160
Leduc-Woodbend	14,655,669	11,462,154
Legal	9,679	8,646
Lindbergh	210,997	199,889
Lloydminster	1,589,496	1,192,401
Malmo	345,221	138,223
Medicine Hat-Redcliff	5,803,354	5,099,750
Morinville	1,906,871	8,761
Namoo	140,299	26,112
New Norway	166,153	141,434
North Big Valley	407,414	31,402
Oberlin	188,245	170,728
Peavey	45,119	5,944
Pendant D'Oreille	7,502,138	6,785,199
Picardville	102,413	105,001
Pouce Coupe	437,741	405,880
Princess	243,510	353,604
Red Coulee	4,056	4,056
Redwater	3,876,617	3,317,997
St. Paul	155,528	133,267
Smith Coulee	184,933	167,982
South Camrose	9,286	3,400
Stettler	149,241	204,136
Suffield	165,033	187,685
Tilley	22,767	23,179
Turner Valley	30,250,757	32,062,085
Viking-Kinsella-Wainwright	17,861,188	17,776,129
West Drumheller	304,900	5,759
Westerose	756,975	88,953
Whitelaw	103,527	10,833
Whitemud	39,713	30,441
Wildmere	910,362	758,110
Wizard Lake	1,453,884	813,520

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ALBERTA OIL REVIEW --

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